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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,622	07/06/2005	Hiroyuki Yamamoto	10873.1675USWO	8388
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EXAMINER YANCHUK, STEPHEN J				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,622

Applicant(s)

YAMAMOTO ET AL.

Examiner

STEPHEN YANCHUK

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Aug 24, 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/22)
Paper No(s)/Mail Date 7/20/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The applicant claims a nonwoven polyolefin fiber that undergoes a sulfonation process. There are two types of fibers claimed, one being less than .5dtex and the other being flattened. The flat fibers are not flattened prior to application, but during; flattened fibers are formed during a thermal pressing step of formation wherein the surface fibers are flattened [Instant Para 15]. The specific surface area is further taught to be .6-1.5m²/g [Instant Para 26].

The applicant provided the information with regard to degree and depth of sulfonation to be related to the structure [Instant Para 31, 38]. It does not appear that there is a specific sulfonation step that is unique to this application that one of ordinary skill in the art would not have known to do in order to sulfonate a membrane.

In an attempt to speed prosecution, the examiner contemplates the necessity of split fibers being incorporated into the membrane in order to produce the depth of sulfonation as claimed [Paragraph 30]. If this is the case, the applicant must place claim 8 into claim 1 wherein the applicant should also assess the rejection of claim 8 and claim 1 together.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-12 & 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato (USPAT 6,423,445) with Komori et al (PGPUB 2002/0025472).

Claims 1, 2 and 21 are rejected by Kato teaching a separator for alkaline battery [Abstract]. The separator is processed with SO_3 gas to make it Sulfonated [Col 4 Ln 30-47]. The sheet is made non-woven [Col 6 Ln 19]. The sheet comprises polyolefin fibers [Col 6 Ln 43]. The fiber sheet comprises fine fibers that are .5 denier or less, preferably, 7E-7 denier to .3 denier [Col 6 Ln 28-30]. Fusible fibers are also used in the non-woven separator [Col 7 Ln 22-30]. The various fibers and therefore associated proportions are taught [Col 8 Ln 5-17]. The molar ratio (S/C) of the fiber sheet is taught to be 1E-3 or more [Col 4 Ln 47-61]. It is taught that the density per unit area of the separator is preferably $30\text{-}100\text{g/m}^2$ or more preferably $40\text{-}80\text{g/m}^2$ [Col 10 Ln 22]. This anticipates the specific surface area range of $.6\text{-}1.5\text{ m}^2/\text{g}$ because Komori shows the specific area ranging from $.6\text{m}^2/\text{g}$ to $.9\text{m}^2/\text{g}$ when the separator's weight per unit area ranges from $60\text{-}85\text{g/m}^2$ [Para 12]. The fibers are taught to be made by a thermal pressing process whereby the surface fibers are flattened [Col 9 Ln 12-40]. Since the prior art teaches substantially the same method of formation of the membrane [Col 8-9] with the same elements, and the instant application teaches the structure is the cause of increased sulfonation [Instant Para 31, 38], the measurements of degree of sulfonation are inherently met. Claiming the measurement of a property is not a patentable limitation and since the examiner has shown an analogous structure, the inherent properties are met.

Claim 3 is rejected by Kato teaching examples with tensile strengths of 176N/5cm [Table 1].

Claim 4 is rejected by thermal bonding fibers taught by Kato [Col 7 Ln 22-30]. The motion and changes of the fibers during bonding read on the claim. The claim as written includes functional language and inherent properties that is inherently taught by Kato.

Claim 5 is rejected by Kato teaching the amount of fibers not being particularly limited wherein the fiber sheet contains 5-100% hydrophilic fibers, 0-70% fine fibers, 0-70% high-strength fibers, and 0-95% fusible fibers [Col 8 Ln 4-10].

Claim 6 is rejected by Kato teaching the high-strength fibers having a tensile strength of 12g/denier (.12N/dtex) or more [Col 6 Ln 63-67]. These fibers exist in a non-woven mesh with other fibers [Col 8 Ln 4-10].

Claim 7 is rejected by Kato teaching the fineness being 7E-7 to .3 denier [Col 6 Ln 28-32].

Claims 8, 11 and 12 define the product by how the product was made. Thus, claims 8, 11 and 12 are product-by-process claims. For purposes of examination, product-by-process claims are not limited to the manipulation of the recited steps, only the structure implied by the steps. See MPEP 2113. In the present case, the recited steps imply a structure having the separator made of polyolefin fibers. The reference suggests such a product.

Claim 8 is rejected by Kato teaching splittable fibers [Col 6 Ln 54].

Claim 9 is rejected by Kato teaching polymethylpentene resin to be used with the fine fibers [Col 6 Ln 34-53].

Claim 10 is rejected by the fusible fibers being the same as the fine fibers but with a relatively lower Tg material than the fine fibers wherein the fineness would be the same as the fine fibers above [Col 7 Ln 22- Col 8 Ln 3].

Claim 11: Fluid-entangling process steps are taught [Col 8 Ln 64].

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-12 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (USPAT 6,423,445) and Komori et al (PGPUB 2002/0025472).

Claims 1, 2 and 21 are rejected by Kato teaching a separator for alkaline battery [Abstract]. The separator is processed with SO₃ gas to make it Sulfonated [Col 4 Ln 30-47]. The sheet is made non-woven [Col 6 Ln 19]. The sheet comprises polyolefin fibers [Col 6 Ln 43]. The fiber sheet comprises fine fibers that are .5 denier or less, preferably, 7E-7 denier to .3 denier [Col 6 Ln 28-30]. Fusible fibers are also used in the non-woven separator [Col 7 Ln 22-30]. The various fibers and therefore associated proportions are taught [Col 8 Ln 5-17]. The molar ratio (S/C) of the fiber sheet is taught to be 1E-3 or more [Col 4 Ln 47-61]. It is taught that the density per unit area of the separator is

preferably 30-100g/m² or more preferably 40-80g/m² [Col 10 Ln 22]. This anticipates the specific surface area range of .6-1.5 m²/g because Komori shows the specific area ranging from .6m²/g to .9m²/g when the separator's weight per unit area ranges from 60-85g/m² [Para 12]. The fibers are taught to be made by a thermal pressing process whereby the surface fibers are flattened [Col 9 Ln 12-40]. Since the prior art teaches substantially the same method of formation of the membrane [Col 8-9] with the same elements, and the instant application teaches the structure is the cause of increased sulfonation [Instant Para 31, 38], the measurements of degree of sulfonation are inherently met. Claiming the measurement of a property is not a patentable limitation and since the examiner has shown an analogous structure, the inherent properties are met. Kato fails to explicitly state the specific surface area.

Komori teaches the specific area ranging from .6m²/g to .9m²/g when the separator's weight per unit area ranges from 60-85g/m² [Para 12]. It would have been obvious for one of ordinary skill in the art to make the area of Kato that of Komori because Komori teaches an alkaline storage battery with excellent self-discharging characteristics [Paragraph4-6].

Claim 3 is rejected by Kato teaching examples with tensile strengths of 176N/5cm [Table 1].

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Claim 11: Fluid-entangling process steps are taught [Col 8 Ln 64].

Response to Arguments

1. Applicant's arguments with respect to claims 1 and 21 have been considered but are moot in view of the new ground(s) of rejection.
2. The applicant's arguments to the tensile strength and absorption depth are not found persuasive because the prior art teaches the claimed limitation.
3. The applicant has chosen to describe the structure by its final product material properties. If the applicant is not persuaded that the prior art is an equivalent to the instant application, a specific identification of the element of the structure that differs is needed in order to overcome the rejection. The applicant must also show or submit findings that show the specific finding specified directly impacts the claimed limitation.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YANCHUK whose telephone number is (571)270-7343. The examiner can normally be reached on Monday through Thursday 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN YANCHUK/
Examiner, Art Unit 1795

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/PATRICK RYAN/

Supervisory Patent Examiner, Art Unit 1795